UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>24 October 2008</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-28</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination (RCE) Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/24/08

has been entered.

2.   This office action is in response to the amendment filed on 10/24/2008. Claims

1-28 are pending in this application and have been considered below.

Response to Arguments

3.   Applicant arguments regarding the rejection under 35 USC 103(a) as being

unpatentable over Cherubini et al (US 6,741,551) in view of McCallister et al (US

6,005,897) have been fully considered and they are **not persuasive**. The examiner

thoroughly reviewed Applicant's arguments but firmly believes that the cited reference

reasonably and properly meets the claimed limitation as rejected.

        (1) Applicant's arguments: "The Applicant respectfully asserts that since

puncturing and rearranging are explicitly set forth in the claims as separate and distinct

operations, the Examiner must properly consider that puncturing is a separate and

distinct operation from rearranging in accordance with the Applicant's claimed subject

matter and in accordance with the Applicant's teaching and disclosure of these two

separate and distinct operations".

   Examiner's response: In figure 3, McCallister et al. clearly illustrates that

encoder 56 produces six encoded bits or symbols (s) in response to the three

information bits processed by the PARSE 30. The output of the encoder 56 is input to

Transparent Convolutional Encoder 62. The encoder 62 produces corresponding

symbol pairs for the data streams in which either both symbols are inverted or neither

symbol is inverted. This clearly shows "rearranging" the order of information bits

coming out of the PARSE 30 from 3 information bits to six information bit which is

performed by encoder 56 and also encoder 56 (see figure 3 below and col 6, lines 39-

67, col 7, lines 1-67.

FIG. 3
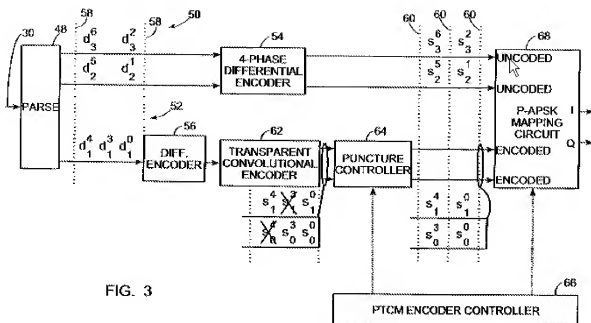
28

(2) The applicant's arguments with respect to new claims 25-28 have been considered but are moot in new ground of rejection.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   **Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cherubini et al. (US 6,741,551) in view of McCallister et al. (US 6,005,897).**

Regarding claim1:

As shown in figure 9 & 10, Cherubini et al. discloses a zero excess bandwidth modulation method, the method comprising:

- TH (Tomlinson-Harashima) precoding (figure 7, column 9, lines 58-64) of the sequence of discrete-valued modulation (figure 5, column 6, lines 66-67, & column 7, lines 1-3) symbols according to a predetermined overall channel symbol response having spectral zeroes at edges (column 8, lines 50-53, & column 10, lines 12-14) of a corresponding Nyquist band (column 6, lines 16-19), thereby generating a plurality of discrete-time transmit signals at a modulation rate (Discrete Fourier Transform DTF generates discrete signals in time domain) (figure 5);

- inserting the plurality of discrete-time transmit signals into means to generate a continuous-time transmit signal by appropriate discrete-time filtering, digital-to-analog conversion (DAC) (figure 10, column 8, lines 62-66), and continuous-time filtering (figure 4);

- ensuring, within the means to generate the continuous-time transmit signal (this limitation is part of digital to analog conversion) (figure 10, DAC, column 8, lines 63-66) that the continuous-time transmit signal has spectral zeroes at the edges of the corresponding Nyquist band, which equals a bandwidth of the available transmission band, and that any spectral components outside of the available transmission band are substantially suppressed (column 8, lines 16-19, & column 10, lines 12-27); and

- launching the filtered, continuous-time transmit signal into the communication channel (figure 10).

Cherubini et al. discloses all of the subject matter as described above except for specifically teaching encoding a plurality of information bits, thereby generating a plurality of encoding bits; rearranging an order of the plurality of encoded bits, thereby generating a sequence of discrete-valued modulation symbols.

However, McCallister et al., in the same field of endeavor teaches encoding a plurality of information bits, thereby generating a plurality of encoding bits (52, 56, 62 in figure 3); rearranging an order of the plurality of encoded bits, thereby generating a sequence of discrete-valued modulation symbols (see in figure 3 that the PARSE 30 which produces 3 information bits and the encoder 56 and 62 produces 6 information bit in response to the 3 information bit. The examiner is making his broadest reasonable interpretation that the producing 6 information bits in response to 3 information bits to be rearranging an order of the plurality of encoded bits) (62, 64, 68 in figure 3 and col 7, lines 59-67, col 8, lines 1-65).

One of ordinary skill in the art would have clearly recognized that in order to change a signal such as bistream into code format encoder devices are used. Encoding the data along with Trellis Coded Modulation (TCM) allows highly efficient transmission of information over communication channels. To convert the signal into bistream and output the complex symbols it would have been obvious to one ordinary skill in the art at the time the invention was made to use an encoder as taught by McCallister et al. in the Cherubini et al. system and method to provide good result during the code generation in the system. Also, it will allow the data to be transmitted over the communication channels more efficiently.

Regarding claim 13:

As shown in figure 9 & 10, Cherubini et al. discloses a zero excess bandwidth modulation communication transmitter, the transmitter comprising:

- a TH (Tomlinson-Harashima) precoder (figure 7, column 9, lines 58-64) that performs precoding of the sequence of discrete-valued modulation (figure 5, column 6, lines 66-67, & column 7, lines 1-3) symbols according to a predetermined overall channel symbol response having spectral zeroes at edges (column 8, lines 50-53, & column 10, lines 12-14) of a corresponding Nyquist band (column 6, lines 16-19, thereby generating a plurality of discrete-time transmit signals at a modulation rate (Discrete Fourier Transform DTF generates discrete signals in time domain) (figure 5;

- means to generate a continuous-time transmit signal by appropriate discrete-time filtering, digital-to-analog conversion (DAC) (figure 10, column 8, lines 62-66), and continuous-time filtering (figure 4;

- wherein the plurality of discrete-time transmit signals is inserted into the means (figure 10, column 8, lines 62-66);

- wherein the means ensures that the continuous-time transmit signal (this limitation is part of digital to analog conversion) (figure 10, DAC, column 8, lines 63-66) has spectral zeroes at the edges of the corresponding Nyquist band, which equals a bandwidth of the available transmission band, and that any spectral components outside of the available transmission band are substantially suppressed (column 8, lines 16-19, & column 10, lines 12-27); and

- wherein the filtered, continuous-time transmit signal is launched into the
  communication channel from the transmit filter (figure 10).

      Cherubini et al. discloses all of the subject matter as described above except for
specifically teaching an encoder and symbol mapper that: encodes a plurality of
information bits, thereby generating a plurality of encoded bits; and rearranges an order
of the plurality of encoded bits, thereby generating a sequence of discrete-valued
modulation symbols.

      However, McCallister et al., in the same field of endeavor teaches an encoder
(56, 62 in figure 3) and symbol mapper (68 in figure 3) that: encodes a plurality of
information bits, thereby generating a plurality of encoded bits (see figure 3); and
rearranges an order of the plurality of encoded bits (see in figure 3 that the PARSE 30
which produces 3 information bits and the encoder 56 and 62 produces 6 information bit
in response to the 3 information bit. The examiner is making his broadest reasonable
interpretation that the producing 6 information bits in response to 3 information bits to be
rearranging an order of the plurality of encoded bits), thereby generating a sequence of
discrete-valued modulation symbols (62, 64, 68 in figure 3 and col 7, lines 59-67, col 8,
lines 1-65).

      One of ordinary skill in the art would have clearly recognized that in order to
change a signal such as bistream into code format encoder devices are used.
Encoding the data along with Trellis Coded Modulation (TCM) allows highly efficient
transmission of information over communication channels. To convert the signal into
bistream and output the complex symbols it would have been obvious to one ordinary

skill in the art at the time the invention was made to use an encoder as taught by

McCallister et al. in the Cherubini et al. system and method to provide good result

during the code generation in the system. Also, it will allow the data to be transmitted

over the communication channels more efficiently.

Regarding claims 2 and 14:

Cherubini et al. further discloses:

the predetermined overall channel response is characterized as

$$h(D) = 1 + h_1 D + h_2 D^2 + \cdots;$$
$$D = e^{-j2\pi fT} (= z^{-1});$$

f is frequency;

T is an inverse of the bandwidth of the available transmission band;

h1, h2, ... are constant valued coefficients; and

h(D) is zero when D = -1.

 (please see column 6, lines 1-5 and equation (1):

$$y_k = \sum_{p=-\infty}^{\infty} \sum_{m=0}^{M-1} A_n^{(pm)} a_{k-nM} (pm).$$

Regarding claim 3:

Cherubini et al. discloses all of the subject matter as described above except for

specifically teaching wherein the encoding of plurality of information bits further

comprising: mapping the rearranged plurality of encoded bits into a plurality of

modulation symbols according to a symbol constellation and a corresponding mapping

function, thereby generating the sequence of discrete-valued modulation symbols.

However, McCallister et al., in the same field of endeavor teaches wherein the
encoding of plurality of information bits further comprising: mapping (68 in figure 3) the
rearranged plurality of encoded bits into a plurality of modulation symbols according to a
symbol constellation and a corresponding mapping function, thereby generating the
sequence of discrete-valued modulation symbols (see in figure 3 that the PARSE 30
which produces 3 information bits and the encoder 56 and 62 produces 6 information bit
in response to the 3 information bit. The examiner is making his broadest reasonable
interpretation that the producing 6 information bits in response to 3 information bits to be
rearranging an order of the plurality of encoded bits) (62, 64, 68 in figure 3 and col 7,
lines 59-67, col 8, lines 1-65).

One of ordinary skill in the art would have clearly recognized that in order to
change a signal such as bistream into code format encoder devices are used.
Encoding the data along with Trellis Coded Modulation (TCM) allows highly efficient
transmission of information over communication channels. To convert the signal into
bistream and output the complex symbols it would have been obvious to one ordinary
skill in the art at the time the invention was made to use an encoder as taught by
McCallister et al. in the Cherubini et al. system and method to provide good result
during the code generation in the system. Also, it will allow the data to be transmitted
over the communication channels more efficiently.

Regarding claims 4 and 16:

Cherubini et al. discloses all of the subject matter as described above except for
specifically teaching encoding a subset of information bits of the plurality of information

bits into the plurality of encoded bits; and mapping the plurality of encoded bits and at

least one uncoded information bits into the plurality of modulation symbols according to

a symbol constellation and a corresponding mapping function, thereby generating the

sequence of discrete-valued modulation symbols.

However, McCallister et al., in the same field of endeavor teaches encoding a

subset of information bits of the plurality of information bits into the plurality of encoded

bits (52, 56, 62 in figure 3); and mapping the plurality of encoded bits (68 in figure 3)

and at least one uncoded information bits into a plurality of modulation symbols

according to a symbol constellation and a corresponding mapping function (abstract),

thereby generating the sequence of discrete-valued modulation symbols (62, 64, 68 in

figure 3 and col 7, lines 59-67, col 8, lines 1-65).

One of ordinary skill in the art would have clearly recognized that in order to

change a signal such as bistream into code format encoders. When modulating signal

using modulation techniques such as Trellis Code Modulation (TCM), trellis encoders

and constellation mapper are used. To convert the signal into bistream and output the

complex symbols it would have been obvious to one ordinary skill in the art at the time

the invention was made to use an encoder and a symbol mapper as taught by

McCallister et al. in the Cherubini et al. system and method to provide good result

during the code generation in the system. Also, it will allow the data to be transmitted

over the communication channels more efficiently.

Regarding claims 5 and 17:

Cherubini et al. further discloses:

TH precoding (figure 7) operates on the discrete-valued modulation symbols to perform

an inverse filtering operation in accordance with the predetermined overall channel

symbol response and executes modulo operations to limit signals within a

predetermined signal region (figure 5, IDFT, column 6, lines 51-55), thereby generating

the plurality of discrete-time transmit signals at the modulation rate (figure 5).

Regarding claims 6 and 18:

Cherubini et al. further discloses:

the sequence of discrete-valued modulation symbols has a modulation type of at least

one of PAM (pulse amplitude modulation), QPSK (quadrature phase shift keying), 16

QAM (quadrature amplitude modulation), and a higher-order QAM (claim 5, 1-3).

Regarding claims 7 and 19:

Cherubini et al. further discloses:

the encoding of the plurality of information bits thereby generating the sequence of

discrete-valued modulation symbols involves at least one of uncoded modulation, TCM

(trellis coded modulation), TTCM (turbo trellis coded modulation), LDPC (low density

parity check) encoding and modulation, and concatenated encoding and modulation

(column 9, lines 28-31).

Regarding claims 8 and 20:

Cherubini et al. further discloses:

the method is performed cooperatively within a communication transmitter and a

communication receiver that are communicatively coupled via the communication channel (figure 9 &10).

Regarding claims 9 and 21:

Cherubini et al. further discloses:

- receiving a continuous-time receive signal from the communication channel (figure 10);

- converting the continuous-time receive signal into a discrete-time signal by means to perform appropriate continuous-time filtering, ADC (analog-to-digital conversion) (figure 10, ADC), and discrete-time filtering (figure 10, LPF), thereby obtaining a plurality of discrete-time receive signals at the modulation rate (figure 10, DTF, T);

- ensuring, within the means to perform appropriate continuous-time filtering, ADC (figure 10, ADC), and discrete-time filtering (figure 10, LPF, that any signal and noise components (figure 10, NOISE) outside of the available transmission band is suppressed and that the discrete-time receive signal is shaped into a form corresponding to the predetermined overall channel symbol response that is assumed for the TH precoding (figure 7, TH Precoder), and

- decoding the plurality of discrete-time receive signals to generate best estimates of the sequence of discrete-valued modulation symbols and the information bits encoded therein (figure 7, T).

Regarding claims 10 and 22:

Cherubini et al. further discloses:

performing adaptive equalization when ensuring that the discrete-time receive

signal is shaped into a form corresponding to the predetermined overall channel symbol

response (column 7, lines 41-43, claim 17, lines 1-3) that is assumed for the TH

precoding (figure 7, TH Precoder).

Regarding claims 11 and 23:

Cherubini et al. further discloses:

predetermined overall channel symbol response employed for TH referred to as h(D), is

a finite impulse response (FIR)

$$h(D) = 1 + h_1 D + h_2 D + \cdots h_L D^L$$

for some finite positive integer L, or an infinite

impulse response (IIR) h(D) = p(D)/q(D);

$$p(D) = 1 + p_1 D + \cdots h_P D^P \quad \text{and} \quad q(D) = 1 + q_1 D + \cdots q_Q D^Q$$

(please see column 6, lines 1-5 and lines 38-45, and equation (1)):

$$y_l = \sum_{p=-\infty}^{\infty} \sum_{m=0}^{M-1} A_p^{(m)} h_{l-pM}(m).$$

Regarding claims 12 and 24:

Cherubini et al. further discloses wherein:

h(D) = (1 + D)/(1 - pD) for 0 <<p <1.

(please see column 6, lines 1-5 and lines 38-45, equation (2)):

$$\sum_k h_k(i) h_{k-qM}^*(j) = \delta_{i-j} \delta_m, \quad 0 \le i, j \le M - 1,$$

Regarding claim 15:

Cherubini et al. discloses all of the subject matter as described above except for specifically teaching wherein the encoder and symbol mapper maps the rearranged plurality of encoded bits into a plurality of modulation symbols according to a symbol constellation and a corresponding mapping function, thereby generating the sequence of discrete-valued modulation symbols.

However, McCallister et al., in the same field of endeavor teaches wherein the encoder (56, 56 in figure 3) and symbol mapper (68 in figure 3) maps the rearranged plurality of encoded bits into a plurality of modulation symbols according to a symbol constellation and a corresponding mapping function (see in figure 3 that the PARSE 30 which produces 3 information bits and the encoder 56 and 62 produces 6 information bit in response to the 3 information bit. The examiner is making his broadest reasonable interpretation that the producing 6 information bits in response to 3 information bits to be rearranging an order of the plurality of encoded bits), thereby generating the sequence of discrete-valued modulation symbols (62, 64, 68 in figure 3 and col 7, lines 59-67, col 8, lines 1-65).

One of ordinary skill in the art would have clearly recognized that in order to change a signal such as bistream into code format encoder devices are used. Encoding the data along with Trellis Coded Modulation (TCM) allows highly efficient transmission of information over communication channels. To convert the signal into bistream and output the complex symbols it would have been obvious to one ordinary skill in the art at the time the invention was made to use an encoder as taught by

McCallister et al. in the Cherubini et al. system and method to provide good result

during the code generation in the system. Also, it will allow the data to be transmitted

over the communication channels more efficiently.

   Regarding claims 25 and 27:

   Cherubini et al. discloses all of the subject matter as described above except for

specifically teaching after rearranging the order of the plurality of encoded bits,

puncturing at least one of the rearranged plurality of encoded bits thereby generating

the sequence of discrete-valued modulation symbols from non-punctured bits within the

rearranged plurality of encoded bits.

   However, McCallister et al., in the same field of endeavor teaches after

rearranging the order of the plurality of encoded bits (see in figure 3 that the PARSE 30

which produces 3 information bits and the encoder 56 and 62 produces 6 information bit

in response to the 3 information bit. The examiner is making his broadest reasonable

interpretation that the producing 6 information bits in response to 3 information bits to be

rearranging an order of the plurality of encoded bits), puncturing (64 in figure 3) at least

one of the rearranged plurality of encoded bits thereby generating the sequence of

discrete-valued modulation symbols from non-punctured bits within the rearranged

plurality of encoded bits (62, 64, 68 in figure 3 and col 7, lines 59-67, col 8, lines 1-65).

Therefore, it would have been obvious to one ordinary skill in the art at the time the

invention was made to use an encoder as taught by McCallister et al. in the Cherubini et

al. system and method in order to removes predetermined bits from the encoded bit

stream and appropriately restructures the encoded bit stream by delaying certain

encoded bits as necessary.

Regarding claims 26 and 28:

Cherubini et al. discloses all of the subject matter as described above except for

specifically teaching before rearranging the order of the plurality of encoded bits,

puncturing at least one of the plurality of encoded bits such that the rearranging the

order of the plurality of encoded bits is performed on non-punctured bits within the

plurality of encoded bits.

However, McCallister et al., in the same field of endeavor teaches before

rearranging the order of the plurality of encoded bits (see in figure 3 that the PARSE 30

which produces 3 information bits and the encoder 56 and 62 produces 6 information bit

in response to the 3 information bit. The examiner is making his broadest reasonable

interpretation that the producing 6 information bits in response to 3 information bits to be

rearranging an order of the plurality of encoded bits), puncturing (64 in figure 3) at least

one of the plurality of encoded bits such that the rearranging the order of the plurality of

encoded bits is performed on non-punctured bits within the plurality of encoded bits (62,

64, 68 in figure 3 and col 7, lines 59-67, col 8, lines 1-65).

Although, McCallister et al. does not specifically teaches that puncturing at least

one of the plurality of encoded bits before rearranging the order of the plurality of

encoded bits; however it would have been obvious to one of ordinary skilled in the art at

the time that invention was made to perform puncturing at least one of the plurality of

encoded bits before rearranging the order of the plurality of encoded bits. Moreover, in

the arguments filed on 10/06/2008, on page 12 and 13 the applicant clearly states that

"Moreover, the Applicant respectfully asserts <u>that one having skill in the art to which the</u>

<u>invention pertains</u>, if provided the Applicant's originally filed specification (including

figures and written description), <u>would properly understand that (1) rearranging of</u>

<u>encoded bit could be effectuated before the puncturing of the rearranged, encoded bits</u>

<u>or (2) puncturing of the encoded bits could be performed before rearranging an order of</u>

<u>the non-punctured (i.e., remaining) encoded bits as well</u>. This may be clearly understood

in dependent claims 25-28". Therefore, it would have been obvious to one ordinary skill

in the art at the time the invention was made to perform puncturing at least one of the

plurality of encoded bits before rearranging the order of the plurality of encoded bits as

taught by McCallister et al. in the Cherubini et al. system and method in order to

removes predetermined bits from the encoded bit stream and appropriately restructures

the encoded bit stream by delaying certain encoded bits as necessary.

Conclusion

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to KABIR A. TIMORY whose telephone number is

(571)270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-

Friday.

       If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kabir A Timory/
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611